ISSN 0021-5198

THE JAPANESE JOURNAL OF PHARMACOLOGY

Volume 61 1993

Official Publication
of
The Japanese Pharmacological
Society

THE JAPANESE JOURNAL OF

PHARMACOLOGY

Published Monthly by The Japanese Pharmacological Society

Volume 61 1993

Chief Editor

Noboru Toda (Ohtsu)

Press Editor

Tomoh Masaki (Kyoto)

Editors

Masao Endoh (Yamagata)
Chiyoko Inagaki (Moriguchi)
Hideaki Karaki (Tokyo)
Eishichi Miyamoto (Kumamoto)
Takeshi Miyata (Kumamoto)
Masamichi Satoh (Kyoto)
Issei Takayanagi (Funabashi)
Hajime Yasuhara (Tokyo)

Language Editor

Stephanie M. Jung

Editorial Assistant

Yoko Takezaki

Editorial Advisory Board

Youichi Abe (Kagawa)
Norio Akaike (Sendai)
Michihiro Fujiwara (Fukuoka)
Yasuo Gomi (Kanazawa)
Reizo Inoki (Ueno)
Koichi Ishikawa (Tokyo)
Morio Kanno (Sapporo)
Masahiro Kawamura (Tokyo)
Yukio Kuroiwa (Tokyo)
Naomasa Miki (Suita)
Hideki Moritoki (Tokushima)
Hiroichi Nagai (Gifu)
Taku Nagao (Tokyo)
Yasuyuki Nomura (Sapporo)
Sachiko Oh-ishi (Tokyo)
Motoo Oka (Tokushima)
Susumu Okabe (Kyoto)
Tomio Okamura (Ohtsu)
Hiroshi Saito (Tokyo)
Masashi Sasa (Hiroshima)
Satoshi Takeo (Hachioji)
Hiroshi Watanabe (Toyama)
Kazuo Watanabe (Chiba)
Itaru Yamamoto (Okayama)

Address for correspondence regarding manuscripts and domestic subscriptions: Editorial Office, The Japanese Pharmacological Society, c/o Department of Pharmacology, Faculty of Medicine, Kyoto University, Sakyo-ku, Kyoto 606-01, Japan
TEL 075-761-8789/FAX 075-771-8972

Subscription rate: Annual domestic subscription price is ¥15,000 (including postage).

Subscription orders from abroad should be sent to one of the following agencies:
Japan Publications Trading Co., Ltd., P.O. Box 5030, Tokyo International, Tokyo 100-31, Japan
Kyowa Book Co., Inc., 1-38 Kanda Jimbo-cho, Chiyoda-ku, Tokyo 101, Japan
Maruzen Co., Ltd., Import & Export Department, P.O. Box 5050, Tokyo International, Tokyo 100-31, Japan
Nihon Faxon Co., Ltd., 7-8-13 Nishi Shinjuku, Shinjuku-ku, Tokyo 160, Japan

Supported in part by a Grant-in-Aid from the Ministry of Education, Science and Culture, Japan for Publication of Scientific Research Results.

Notice about photocopying: In order to photocopy any work from this publication, except for legally permitted cases, you or your organization must obtain permission from either of the following organizations which have been delegated for copyright clearance by the copyright owner of this publication:
Except in the USA: Akasaka Branch Office, Japan Reprographic Rights Center, c/o The Copyright Council of the Academic Societies, 704-42-6 Akasaka 9-chome, Minato-ku, Tokyo 107, Japan TEL 03-3475-4621·5618/FAX 03-3403-1738
In the USA: Copyright Clearance Center, Inc., 27 Congress St., Salem, MA 01970, USA TEL 508-744-3350/FAX 508-741-2318

Copyright © The Japanese Pharmacological Society 1993

CONTENTS

Volume 61 • 1993

Regular Papers

Number 1 January 1993

Effects of Palmatine on Motor Activity and the Concentration of Central Monoamines and Its Metabolites in Rats	Ming-Tsuen Hsieh, Su-Hei Su, Huei-Yann Tsai, Wen-Huang Peng, Chia-Chang Hsieh and Chieh-Fu Chen	1
Inhibitory Effects of a Novel Antiplatelet Agent, E5510, on Collagen-Induced Platelet-Derived Growth Factor Release and Aggregation of Human Platelets In Vitro	Ken-ichi Nomoto, Takao Saeki, Motoji Kogushi, Hiroko Kobayashi, Tohru Fujimori and Isao Yamatsu	7
Cytoprotective Action of L-Arginine against HCl-Induced Gastric Injury in Rats: Involvement of Nitric Oxide?	Koji Takeuchi, Tomohisa Ohuchi, Shinichi Kato and Susumu Okabe	13
Suppression of IgE Production by IPD-1151T (Suplatast Tosilate), a New Dimethylsulfonium Agent: (1) Regulation of Murine IgE Response	Yukiyoshi Yanagihara, Mamoru Kiniwa, Koichi Ikizawa, Hidetoshi Yamaya, Takao Shida, Naosuke Matsuura and Akihide Koda	23
Suppression of IgE Production by IPD-1151T (Suplatast Tosilate), a New Dimethylsulfonium Agent: (2) Regulation of Human IgE Response	Yukiyoshi Yanagihara, Mamoru Kiniwa, Koichi Ikizawa, Takao Shida, Naosuke Matsuura and Akihide Koda	31
Repeated Antigenic Challenge-Induced Airway Hyperresponsiveness and Airway Inflammation in Actively Sensitized Rats	Miwa Misawa and Yoshihiko Chiba	41
Further Studies on the Endogenous Serotonin-Uptake-Inhibitor-Like Substances in the Human Cerebrospinal Fluid	Shinichiro Goto, Toru Egashira and Yasumitsu Yamanaka	51
Isoproterenol Changes the Relationship between Cytosolic Ca^{2+} and Contraction in Guinea Pig Taenia Caecum	Seong-Chung Kwon, Hiroshi Ozaki, Masatoshi Hori and Hideaki Karaki	57

Number 2 February 1993

Effect of Ibudilast on Microcirculation Thrombosis in Rat Inner Ear	Kazuo Umemura, Yoshihiro Asai, Yoshihiro Hirata, Toshihiko Uematsu and Mitsuyoshi Nakashima	75
Nipradilol Displays a Unique Pharmacological Profile of Affinities for the Different α_1-Adrenoceptor Subtypes	Junji Kinami, Hiroshi Tsuchihashi, Keiko Maruyama, Keiko Sasaki and Takafumi Nagatomo	81
Characterization of Adrenergic Receptors in Membranes from the Rat Seminal Vesicle	Sumio Shima	87
Characterization of β-Adrenoceptors in Pig Basilar Artery from Functional and Radioligand Binding Studies	Atsushi Miyamoto, Ken Ito and Akira Nishio	93
A Simple Chemiluminescence Method for Measuring Oxygen-Derived Free Radicals Generated in Oxygenated Rat Myocardium	Itaru Ohoi, Keiko Sone, Hiroko Tobari, Eiji Kawano and Keita Nakamura	101
Enhanced Production of Platelet-Activating Factor in Stimulated Rat Leukocytes Caused by the Blockade of Lysophospholipid Acylation	Hiroaki Naraba, Yohsuke Imai, Masahiko Hayashi and Sachiko Oh-ishi	109
Anxiolytic Activity of SC-48274 Compared with Those of Buspirone and Diazepam in Experimental Anxiety Models	Nobuya Ogawa, Chiaki Hara and Shunji Takaki	115
Mechanism by Which Indomethacin Delays Gastric Ulcer Healing in the Rat: Inhibited Contraction of the Ulcer Base	Yoshiyasu Ogihara and Susumu Okabe	123

Number 3 March 1993

Effects of BMY-21502 on Anoxia in Mice	Manabu Amano, Arata Goto, Norimitsu Takahashi, Takaaki Hasegawa and Toshitaka Nabeshima	157
Leakage of the Fluorescent Ca^{2+} Indicator Fura-2 in Smooth Muscle	Minori Mitsui, Asaki Abe, Masaomi Tajimi and Hideaki Karaki	165
Vascular Responsiveness of Rabbit Common Carotid, Renal and Femoral Arteries to α-Adrenoceptor Agonists	Toshimasa Fujiwara and Shigetoshi Chiba	171
Calcium-Induced Vasodilation Due to Increase in Nitric Oxide Formation in the Vascular Bed of Rabbit Ear Preparation	Naoyuki Takasugi	177
Mechanisms of the Inhibitory Action of Semotiadil Fumarate, a Novel Ca Antagonist, on the Voltage-Dependent Ca Current in Smooth Muscle Cells of the Rabbit Portal Vein	Noriyoshi Teramoto	183
Circadian Rhythm in the Cerebral Resistance to Hypoxia in Mice	Tohru Masukawa and Yoshihiro Tochino	197
Regulation of Spontaneous Acetylcholine Release in the Hypothalamic Vasopressinergic Supraoptic Nucleus of a Freely Moving Rat: A Study by In Vivo Microdialysis	Mayumi Mori, Toshio Kamiya, Hiromi Tsushima and Tomohiro Matsuda	203
Novel Low Immunosuppressive Derivatives of the Antitumor Drug Fluoropyrimidine, UK-21 and UK-25: Effect on Delayed Type Hypersensitivity and Tumor Immunity	Osami Sakamoto, Hiroshi Mori, Kiyoyuki Kitaichi and Akihide Koda	209
Characterization of a Novel Aldose Reductase Inhibitor, TAT, and Its Effects on Streptozotocin-Induced Diabetic Neuropathy in Rats	Shinji Inukai, Mitsuji Agata, Manami Sato, Akira Naitou, Hidehiko Matsukawa and Masayoshi Goto	221
Comparative Effects of Cimetidine and Famotidine on the Vagally Stimulated Acid Secretion in the Isolated Mouse Whole Stomach	Kazuo Watanabe, Shingo Yano, Masayuki Yamamoto and Shoko Kanaoka	229
Involvement of Serotonergic Receptor Subtypes in the Production of Antinociception by Psychological Stress in Mice	Shogo Tokuyama, Masakatsu Takahashi and Hiroshi Kaneto	237
Comparison of Endothelium-Dependent Responses of Canine Internal Thoracic and Coronary Arteries	Shoichiro Shiraishi, Atsumi Mori and Noboru Toda	243

Number 4 April 1993

Effects of DS-4574, a New Orally Active Antiallergic Agent, in Experimental Allergic and Inflammatory Models	Shunzo Aibara, Mikio Mori, Teiji Iwamoto, Masao Tsubokawa, Hideo Takamori and Wataru Tsukada	267
Inhibitory Effect of Aniracetam on N-Type Calcium Current in Acutely Isolated Rat Neuronal Cells	Hiroshi Koike, Hiroshi Saito and Norio Matsuki	277
Altered Vasoconstrictor Responsiveness in Vitamin D-Induced Arteriosclerotic Rat Aortas	Satomi Kitagawa, Yu Yamaguchi, Masaru Kunitomo, Noriko Imaizumi and Motohatsu Fujiwara	283
Effects of Cholesterol Loading on Autoimmune MRL-*lpr/lpr* Mice: Susceptibility to Hypercholesterolemia and Aortic Cholesterol Deposition	Yu Yamaguchi, Satomi Kitagawa, Noriko Imaizumi, Masaru Kunitomo and Motohatsu Fujiwara	291
NC-1300, a Proton-Pump Inhibitor, Requires Gastric Acid to Exert Cytoprotection in Rat Gastric Mucosa	Tetsuo Arakawa, Takashi Fukuda, Kazuhide Higuchi, Kazunari Koike, Hiroshi Satoh and Kenzo Kobayashi	299
Mechanism of Action of KRN2391, a Novel Vasodilator, in Canine Mesenteric Artery	Nobuyuki Ogawa, Yuzo Fukata, Soichiro Kaneta, Yasuhiro Jinno, Atsushi Miwa and Hideaki Fukushima	303
Comparison of the Anticonflict Effect of Buspirone and Its Major Metabolite 1-(2-Pyrimidinyl)-Piperazine (1-PP) in Rats	Manabu Amano, Arata Goto, Atsuko Sakai, Minako Achiha, nee Hara, Norimitsu Takahashi, Chiaki Hara and Nobuya Ogawa	311

The M_3-Muscarinic Cholinoceptor Subtype in Rat Prostate and Its Down Regulation by Aging — Hidenori Yazawa and Kazuo Honda — 319

Microinjection of α-Calcitonin Gene-Related Peptide into the Hypothalamus Activates Sympathetic Outflow in Rats — Takashi Hasegawa, Kunihiko Yokotani, Yasunobu Okuma, Masanobu Manabe, Masahisa Hirakawa and Yoshitsugu Osumi — 325

Pharmacological Isolation and Characterization of NMDA Receptor-Mediated Synaptic Potential in the Dentate Gyrus of Rat Hippocampal Slices — Kazuho Abe and Hiroshi Saito — 333

SUT-8701, a Cholecystokinin Analog, Prevents the Cholinergic Degeneration in the Rat Cerebral Cortex Following Basal Forebrain Lesioning — Masanori Takahashi, Kiminobu Sugaya, Kumi Kojima, Tsuyoshi Katoh, Masaaki Ueki and Kazuhiko Kubota — 341

Non-Competitive Antagonism by Hirsuteine of Nicotinic Receptor-Mediated Dopamine Release from Rat Pheochromocytoma Cells — Tomokazu Watano, Ken Nakazawa, Tomoko Obama, Mayumi Mori, Kazuhide Inoue, Kannosuke Fujimori and Akira Takanaka — 351

Short Communications

Number 1 January 1993

A Comparison of the Effects of Estradiol and 2- and 4-Hydroxyestradiol on Uterine Ornithine Decarboxylase Activity in Immature Rats — Hiroshi Kogo, Donald C. Johnson, Sudhansu K. Dey and Satoshi Takeo — 65

Influence of Imidapril on Abnormal Biochemical Parameters in Salt-Loaded Stroke-Prone Spontaneously Hypertensive Rats (SHRSP) — Noriko Ogiku, Hiroshi Sumikawa, Shinji Minamide and Ryuichi Ishida — 69

Number 2 February 1993

Effects of Indomethacin and Prednisolone on the Different Stages of Healing of Acetic Acid-Induced Gastric Ulcers in the Rat — Yoshiyasu Ogihara and Susumu Okabe — 133

Chronopharmacokinetic Study of a New Immunosuppressive Agent, FK 506, in Mice — Akio Fujimura, Tsuyoshi Shiga, Kyo-ichi Ohashi and Akio Ebihara — 137

Effects of Nerve Growth Factor (NGF) in Rats with Basal Forebrain Lesions — Shin-ichi Ogawa, Toshitaka Nabeshima, Tsutomu Kameyama and Kyozo Hayashi — 141

Effects of Protein Kinase C on the Muscarinic Excitation of Rat Adrenal Chromaffin Cells — Akinori Akaike, Masashi Sasa, Yutaka Tamura, Hisamitsu Ujihara and Shuji Takaori — 145

The Repeated Administration of Ketamine Induces an Enhancement of Its Stimulant Action in Mice — Yoshitaka Uchihashi, Hisashi Kuribara, Toshihiro Morita and Tatsushi Fujita — 149

Expression and Functional Characterization of a Rat Sulfotransferase (ST1A1) cDNA for Sulfations of Phenolic Substrates in COS-1 Cells — Shogo Ozawa, Kiyoshi Nagata, Da-Wei Gong, Yasushi Yamazoe and Ryuichi Kato — 153

Number 3 March 1993

Renal Tubular Site of Action of KW-3902, a Novel Adenosine A_1-Receptor Antagonist, in Anesthetized Rats — Hideaki Mizumoto and Akira Karasawa — 251

Antisecretory and Antiulcer Effects of Ebselen, a Seleno-Organic Compound, in Rats — Yoshiaki Tabuchi and Yoichi Kurebayashi — 255

Modification by cGMP of Glibenclamide-Sensitive K^+ Currents in *Xenopus* Oocytes — Hidenari Sakuta, Koichi Okamoto and Yasuhiro Watanabe — 259

Number 4 April 1993

The Cytosolic Acidification in Rat Parotid Cells Is Associated with an Increase in Cytosolic Ca^{2+} Concentration — Akihiko Tanimura, Yosuke Tojyo and Yoshito Matsumoto — 357

Effect of KB-2796, a New Diphenylpiperazine Ca^{2+} Antagonist, on Glutamate-Induced Neurotoxicity in Rat Hippocampal Primary Cell Cultures — Hideaki Hara, Koichi Yokota, Masamitsu Shimazawa and Takayuki Sukamoto — 361

Ca^{2+}-Induced Increase in Oxidative Metabolism of Dissociated Mammalian Brain Neurons: Effect of Extract of *Ginkgo Biloba* Leaves — Yasuo Oyama, Akemi Hayashi and Toshiko Ueha — 367

Rapid Communications

Number 3 March 1993

Quaternary Diltiazem Can Act from Both Sides of the Membrane in Ventricular Myocytes — Satomi Adachi-Akahane, Yukiko Amano, Ryo Okuyama and Taku Nagao — 263

Number 4 April 1993

Absence of Effects of Class III Antiarrhythmic Agents on Cloned Cardiac K Channels — Toshio Yamagishi, Kuniaki Ishii and Norio Taira — 371

Blockade of Retinal NMDA Receptors by Sodium Nitroprusside Is Probably Due to Nitric Oxide Formation — Hisamitsu Ujihara, Akinori Akaike, Yutaka Tamura, Takeharu Yokota, Masashi Sasa, Satoshi Kashii and Yoshihito Honda — 375